Atty. Dkt. No. 032026-0579

## Amendments to the Claims:

Please amend claims 29, 40 and 46; cancel claims 30, 36, 38-39,52-58; and add claims 59-60. This listing of claims will replace all prior versions, and listings, of claims in the application:

1-28. (Canceled)

- 29. (Currently Amended) A method of producing L-β-lysine, comprising:
- (a) culturing a prokaryotic host cell comprising an expression vector that encodes lysine 2,3-aminomutase in the presence of L-lysine, wherein the vector that encodes lysine 2,3-aminomutase has a nucleic acid sequence of SEQ ID NO: 3 and the cultured host cell expresses lysine 2,3-aminomutase, and
  - (b) isolating L- $\beta$ -lysine from the cultured host cells.

30-36. (Canceled)

37. (Previously Presented) The method of claim 29 wherein the isolated L-β-lysine is enantiomerically pure.

38-39. (Canceled)

- 40. (Currently Amended) A method of producing L-β-lysine, comprising:
- (a) immobilizing lysine 2,3-aminomutase on a suitable support, wherein the lysine 2,3-aminomutase has an amino acid sequence selected from the group consisting of (i) SEQ ID NO: 4, and (ii) a conservative amino acid variant of SEQ ID NO: 4;
- (b) activating the lysine 2,3-aminomutase with cofactors required for lysine 2,3-aminomutase activity; and
- (c) contacting L-lysine with the immobilized lysine 2,3-aminomutase to produce L- $\beta$ -lysine.

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- 41. (Previously Presented) The method of claim 40 wherein the L-lysine is contacted with the immobilized lysine 2,3-aminomutase for a sufficient amount of time to produce enantiomerically pure L-β-lysine.
- 42. (Previously Presented) The method of claim 37 further comprising separating the L-β-lysine from the L-lysine.
- 43. (Previously Presented) The method of claim 42 wherein the separation of the L-β-lysine from the L-lysine is achieved using high performance chromatography.
- 44. (Previously Presented) The method of claim 37 wherein the process is a continuous process.
- 45. (Previously Presented) The method of claim 37 wherein the cofactors required for lysine 2,3-aminomutase activity comprise:
  - (i) at least one of ferrous sulfate or ferric ammonium sulfate;
  - (ii) pyridoxal phosphate;
  - (iii) at least one of dehydrolipoic acid, glutathione or dithiothreitol;
  - (iv) S-adenosylmethionine; and
  - (v) sodium dithionite.
  - 46. (Currently Amended) A method of producing L-β-lysine, comprising:
- (a) culturing a prokaryotic host cell comprising an expression vector that encodes lysine 2,3-aminomutase in the presence of L-lysine, wherein the cultured host cell expresses lysine 2,3-aminomutase, and
- (b) isolating L-β-lysine from the cultured host cells, The method of claim 37, wherein the lysine 2,3-aminomutase has an amino acid sequence selected from the group consisting of (i) SEQ ID NO: 4 and [4-and] (ii) a conservative amino acid variant of SEQ ID NO: 4.

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- 47. (Previously Presented) A method of producing L-β-lysine, comprising:
- (a) incubating L-lysine in a solution containing purified lysine 2,3-aminomutase, wherein the lysine 2,3-aminomutase has an amino acid sequence selected from the group consisting of (i) SEQ ID NO: 4, and (ii) a conservative amino acid variant of SEQ ID NO: 4, said solution containing all cofactors required for lysine 2,3-aminomutase activity; and
  - (b) isolating L- $\beta$ -lysine from the incubation solution.
- 48. (Previously Presented) The method of claim 47, wherein step (b) further comprises isolating L-β-lysine from L-lysine via chromatography.

49-58. (Canceled)

- 59. (New) The method of claim 46 wherein the isolated L-β-lysine is enantiomerically pure.
- 60. (New) The method of claim 46 wherein the cofactors required for lysine 2,3-aminomutase activity comprise:
  - (i) at least one of ferrous sulfate or ferric ammonium sulfate;
  - (ii) pyridoxal phosphate;
  - (iii) at least one of dehydrolipoic acid, glutathione or dithiothreitol;
  - (iv) S-adenosylmethionine; and
  - (v) sodium dithionite.